Draft

Technical Support for Drinking Water Optimization Program

A. Purpose

This contract supports drinking water treatment optimization activities of the U.S. Environmental Protection Agency (EPA), Office of Water, Office of Groundwater and Drinking Water (OGWDW), Technical Support Center (TSC). This contract will provide state-of-the-art support for optimizing drinking water systems to maximize public health protection and assuring regulatory compliance.

B. Background

The U.S. EPA, OGWDW is responsible for implementing the Safe Drinking Water Act (SDWA). One of the principal requirements of the SDWA is for U.S. EPA to develop and implement regulations that will ensure that all public water systems provide drinking water that is safe. These regulations are written and promulgated by U.S. EPA, but the authority and responsibility for adoption and enforcement of their provisions are delegated to the State governments through a primary enforcement (primacy) process.

Once the regulations are incorporated into State Codes, public water systems must meet their regulatory requirements. Often the regulations, in their complexity contain technical requirements that may be unclear. These technical issues need to be clarified and resolved in order that the requirements of the regulations are met expeditiously and efficiently. TSC has the responsibility to undertake studies of these technical issues to successfully implement drinking water regulations. These studies may range from bench scale treatability studies to the development of techniques and operational tools to identify and correct performance problems in full-scale treatment plants. TSC is also responsible for the following activities:

- informing the technical community, including State agencies, about ways to overcome barriers to compliance;

- microbial and physicochemical analytical method development;
- investigation and development of microbial surrogates indicative of filtration plant performance; and
- evaluation of virus removal mechanisms in granular media filtration and mathematical modeling of treatment processes.

The goal of these activities is so that drinking water utilities can make better, more informed decisions about operation of their systems to comply with the regulations.

Under this contract, the term optimization refers to improving the levels of drinking water treatment provided, for any contaminant, so that the highest levels of water quality are attained. This is based on the assumption that, the higher the quality of treated water, the greater the protection of the public health of those consuming the drinking water. Optimized treatment plants will achieve levels of water quality in excess of those required to meet EPA regulations.
TSC's optimization program has also focused on achieving these high levels of drinking water quality through operational changes with limited use of new technology and additional treatment processes. This has represented a unique approach since, historically, drinking water treatment plants have relied solely on new/additional technology design.

C. TASKS

This contract will provide support to TSC's optimization program through projects in the following areas: (1) Area-Wide Optimization Program Activities; (2) Technology Transfer; and (3) Total System Optimization (TSO).

The general protocol of the existing Composite Correction Program (CCP) will be the basis for all activities. Where needed, the contractor shall also provide analytical support for related field activities.

In performing these services, contractors will always be required to identify themselves as contractor personnel whenever their EPA work brings them in contact with the public, as in providing technical information and in the conduct of training and conferences. Contractor staff must always wear their contractor ID badges when interacting with the public. When the contractor is to conduct training, the EPA will review and approve all materials and courses before presentation, ensuring the training material is factual, and clear in its presentation of EPA's views, policies, and regulations.

Task 1. Area-Wide Optimization Program Activities

The objective of this area is to develop and maintain a national network of State agencies and personnel for dissemination and implementation of optimization opportunities for water utilities. Support for AWOPs will consist of activities in the following areas through which the ability to use AWOP to transfer future technical and institutional tools to support optimization activities at the plant, State and national level.

1.1. Facilitation of regional multi-State Area-Wide Optimization Programs (AWOPs)

The contractor shall facilitate at least three planning meetings each year for the existing four regional multi-State AWOPS (Regions 3, 4, 6, and 10) and any new regional multi-state AWOPs that TSC shall determine is required. The planning meetings shall be facilitated using the strategic implementation process. This process uses a nominal group technique to define the needs of the regions and States and to effectively discuss and prioritize a list of topics. These topics are discussed and as a result of these discussions, action items are established for the regions, States, the contractor, and TSC.

The contractor shall prepare summaries of the meetings including the discussion topics identified, summaries of discussions of the topics, and a list of action items agreed upon. The contractor shall also review, at the meeting, the action items that the regions and States have developed and assess if they reflect the necessary activities identified during the discussions.

The contractor shall deliver, at the planning meetings, information to the regions and States earlier identified as necessary for them to proceed with development of their AWOP. The contractor shall deliver this information in a facilitated format using presentations and workshops that allow the regions and States to receive hands-on experience with the materials. Identifying and documenting institutional barriers and approaches for overcoming these barriers and determining whether these lessons learned are applicable to the drinking water program, in general, will be a key activity in this area.

1.2. Preparation of materials to support regional multi-State AWOPs

Based upon the discussion from the regional multi-State AWOPs, the contractor shall prepare the materials needed to address the needs of the regions and States so that the development of the State AWOPs can proceed. These efforts shall include innovative approaches for addressing institutional issues. The contractor shall extrapolate or adapt based on their AWOP experiences how this could apply to the drinking water program, in general. The materials shall be prepared in a format consistent with the strategic implementation process.

In preparation of these materials, the contractor shall use information from literature searches as well as information derived from their other experiences in performance improvement implementation. The materials developed shall be directly applicable to the day-to-day operation of the State and regulated water systems.

1.3. Training on Composite Correction Program (CCP) and Performance Based Training (PBT)

As part of the support to the regional multi-State AWOPs, the contractor shall provide training on both the CCP and PBT. As part of this training, the contractor shall take groups of regional and State staff to actual drinking water treatment plants and demonstrate the various aspects of the CCP and PBT. The contractor shall make sure that all persons involved understand the basic philosophy of these technical tools and get the experience necessary so that they can use these technical tools on their own at the completion of the training. As necessary, CCP and PBT training resources and approaches will be developed and demonstrated to enhance their effectiveness. The contractor may be asked to analyze whether or not PBT can be effective outside the framework of AWOP and, if so, to develop/deliver training.

1.4 Integration of other complementary programs into AWOP

There are other State drinking water program activities that could potentially support the goals of the AWOPs. The contractor shall work with State personnel and EPA staff in the multi-State AWOPs to identify potential links with these programs and develop strategies for integration of the activities into the AWOPs. Potential complementary activities shall include, but are not limited to:

- State-specific optimization programs;

- capacity development programs;

- operator certification programs, and

- source water protection programs.

Task 2. Technology Transfer

The contractor shall develop technology transfer materials as needed to meet the goals of TSC's treatment optimization program. The main focus of the technology transfer activities will be to

take optimization materials used in the facilitated format of the regional multi-State AWOPs and adapt them so that they can be used in a non-facilitated format. Other materials that may be included are training materials, optimization awareness documents, prioritization documents, and consumer handbooks. The following are example areas for development of these documents:

- D/DBP CCP procedures including spreadsheets; and
- PBT for turbidity.

If an analyses of these areas determine that these tools are effective outside the framework of AWOP, then the contractor may be asked to develop/deliver these optimization activities and resulting materials.

Task 3 Total System Optimization

The majority of optimization activities have focused on microbial contaminants and optimized filter performance through the use of the CCP. However, water systems now face regulations that require simultaneous compliance with various regulations, requiring plant operators to control their treatment processes for multiple objectives. The Total System Optimization (TSO) approach refers to the development and demonstration of new optimization technical tools that water systems can use to respond operationally to the requirements of new regulations. In developing these new technical tools, the CCP and PBT procedures will be modified to include additional areas of required compliance or desired optimization to help water systems achieve TSO.

Under this task, the contractor shall take fundamental technical information from various sources and adapt it to practical operational procedures and spreadsheets that assist water systems to optimize their treatment plant and distribution system for these various treatment objectives. The sources of the required technical information shall be from literature searches or from other established experts. The contractor is responsible for identifying the required experts and working with them to provide the required practical technical tools to achieve TSO. Potential TSO areas in which the contractor may be expected to work shall include, but are not limited to:

- disinfection/disinfection byproducts (D/DBP);
- distribution systems for DBPs and microbial control;
- ground water;
- Total Coliform Rule;
- Lead and Copper Rule; and
- source water protection.

If an analyses of these TSO areas determine that these tools are effective outside the framework of AWOP, then the contractor may be asked to develop/deliver these optimization activities and resulting materials.

Field-studies and/or laboratory bench-scale studies may be needed to support the development of the various TSO areas. The contractor may be required to provide analytical support for these activities.

D. Quality Assurance (QA) Requirement

Where QA Project Plans are required, the contractor shall prepare them in conformance with EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5). QA performance shall be in conformance with the Office of Water Quality Management Plan.

E. Reporting and Meetings

The contractor shall prepare monthly reports, which describe the accomplishments for that period, and the future month's work. In addition, the contractor shall attend quarterly strategic planning meetings that will be run by TSC representatives. Two of these quarterly meetings will be held on-site at the offices of TSC in Cincinnati, Ohio. It is anticipated that one on-site meeting will be held in May or June when funding levels for the upcoming fiscal year have been determined, and the second meeting approximately 6 months later in November or December. The other two quarterly meetings will be conducted by telephone conference call.

F. Contract Activity Information Technology Requirements

The following are standard requirements for Office of Water contracts. Only those sections relevant in the context of the requirements in Section C apply to this contract.

All information developed under the contract shall be amenable to electronic data processing, and shall be capable of being stored and utilized by, or be converted to the EPA's computer systems. The work assignment shall designate the specific computer system to be used for such storage and utilization (i.e., EPA mainframe or PC systems)

The contractor shall develop and maintain information management systems compatible with existing or developing OW databases, so the data from other studies can also be inputted. Data sets and analysis software and documentation shall be accessible to the EPA Project Officer and Work Assignment Manager and shall be provided to the Project Officer upon expiration of the contract.

1. All work performed under this contract shall adhere to EPAAR 1552.211-79 "Compliance with EPA Policies for Information Resources Management", which requires the adherence to all Agency directives for performance of any IRM related work.

2. IRM Policies, Standards and Procedures [http://www.epa.gov/irmpoli8/].
   The 2100 Series (2100-2199) of the Agency's Directive System contains the majority of the Agency's IRM policies, standards and procedures.

3. Data Standards and Environmental Registry (EDR) [http://www.epa.gov/edr].

   Any development/enhancement of information resources[1], as well as any data products flowing

[1] Information Resources for this process include systems, databases, and models/web applications that utilize information in OW systems and databases.

to or from EPA information resources, must adhere to data standards detailed in the EDR.

4. Information Technology Architecture Road Map (ITARM) [http://www.epa.gov/etsdweb1/irm_itarm/]

   For development/enhancement of information resources, contractor must adhere to all technical specifications listed in the ITARM.

5. Environmental Information Management System (EIMS) [http://www.epa.gov/eims]. A contractor developing or enhancing an information resource shall first conduct a thorough search of existing information resources, through means such as EIMS, to ensure development/enhancement of information resources does not duplicate existing information resources. If duplication is determined, the contractor shall consult with the EPA Project Officer to ensure that existing information resources are optimally utilized in conjunction with information resource being developed/enhanced by the contractor. For any development/enhancement of information resources, the contractor shall work with the EPA on inserting/updating resource description information in EIMS.

6. Monitoring information in STORET [http://www.epa.gov/storet].

   Any water quality, biological, sediment, and ecological monitoring data collected as part of contract activities must be entered into STORET or made available to EPA in a STORET compatible format.

7. National Hydrography Dataset (NHD) Indexing [http://www.epa.gov/waters].

Data related to OW programs that is required to meet the EPA Latitude/Longitude Standard shall also be indexed to the NHD, using the EPA OW standard formats available on the WATERS website. Exceptions include groundwater data and data that is related to points greater than two miles from the United States coastline. The WATERS website describes EPA tools and training that are available for NHD indexing.

G. Environmental Justice

Executive Order 12898 (Environmental Justice) directs federal agencies to focus on minority and low-income populations in implementing their programs, policies, and activities. Consistent with the Agency's continuing commitment to environmental justice and fair treatment of all people, the contractor shall notify the EPA project officer of minority and low-income populations, as well as populations with differential patterns of subsistence consumption of fish and wildlife, likely to be affected by a program, policy, or activity associated with work done under the contract. Additionally, when directed by the EPA, the contractor shall identify any disproportionately high and adverse human health or environmental effects of the program, policy or activity of concern on these populations (to be tailored as appropriate for individual statements of work).